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Project No. 4980

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Re: Clearwater Paper Corporation in Lewiston, Idaho -- Required Testing  
Pursuant to EPA Request for Information, July 19, 2013

On behalf of Clearwater Paper Corporation (CLW) and in accordance with paragraph #3 of EPA's Request for Information (RFI), Horizon Engineering submits this Advance Notification that Horizon Engineering is scheduled to perform required testing at the above-referenced facility beginning the week of December 2nd, 2013. This also serves as the Test Plan, unless EPA notifies Horizon Engineering within thirty days of receipt of this notice as set forth in the RFI. The elements required by EPA in the RFI for inclusion in a Test Plan are presented below.

1. **Sources To be Tested:** Internal process points associated with the M&D No. 1 and M&D No. 2 Digesters
2. **Test Locations:**
  - Sample Point 1 M&D No. 1: Exhaust to Kone Bin
  - Sample Point 2 M&D No. 1: Exhaust to Kone Bin
  - Sample Point 3 M&D No. 1: Secondary Exhaust from the Rotary Valve to the Exhaust Chamber
  - Sample Point 4 M&D No. 1: Exhaust line from Drop Chute to Exhaust Chamber
  - Sample Point 5 M&D No. 2: Exhaust to Kone Bin
  - Sample Point 6 M&D No. 2: Exhaust to Kone Bin
  - Sample Point 7 M&D No. 2: Secondary Exhaust from the Rotary Valve to the Exhaust Chamber

- Sample Point 8 M&D No. 2: Exhaust line from Drop Chute to Exhaust Chamber
3. **Purpose of the Testing:** Compliance with the RFI and extension granted on August 28, 2013.
  4. **Process Description:** The sawdust pulping system includes two M&D continuous digesters, each operating at approximately 250 ADT/day of equivalent bleached pulp production. Two sawdust storage silos pneumatically feed sawdust to the top of a cyclone separator, where the wood and transport air are separated. On each line, the wood drops into a storage vessel known as the Kone bin, located below the cyclone. Each Kone bin typically contains 10 to 15 feet of wood during normal operation.

On each line, sawdust gravity feeds from the Kone bin into a metering screw, which feeds a rotary inlet valve known as the Bauer valve, before dropping into the digester itself. The rotary inlet valve contains 10 pockets. As the pockets rotate they are sealed against the casing of the valve. The seal prevents back-flow from the pressurized digester vessel.

Fresh steam is used in each rotary inlet valve to heat the sawdust, to pressurize the valve pockets, and to help push sawdust out of the valve pockets to purge the pocket. Sawdust then falls by gravity into the digester vessel. The majority of this steam is either discharged into the digester vessel with the sawdust, or is recycled from the discharge side of the valve to the inlet side of the valve via the primary exhaust line. Secondary exhaust from each rotary inlet valve flows to an exhaust chamber, where it is sprayed with a condensing shower of mill water. Any remaining material not condensed and injected into the sawdust through the metering screw will move through two lines into the bottom of the Kone bin. In addition to the secondary exhaust line, a line from the drop chute between the metering screw and the rotary inlet valve also flows to the exhaust chamber. (See Figure 1)

Once the wood enters the digester it falls onto a midfeather separating plate, where it is confined between constantly moving flights. The flights carry the sawdust down the top side of the midfeather, around the lower end of the digester, and then up the bottom half of the divided digester. When the sawdust reaches the top of the digester, it exits out of the discharge nozzle (on the bottom side of the digester) and falls into the surge tube, before going on to the blow tank. From the blow tank the sawdust pulp is washed and screened, prior to a final bleaching operation.



5. **Process Mode of Operation During Testing:** The operating mode during the testing will be at normal operating rates and conditions. The pulp from these digesters will be processed through a 4-stage brownstock washing line, and then through a 4-stage bleach plant. The pulp will be used in the manufacture of bleached paperboard.
6. **Pollutants to be Tested:** Methanol and TRS.<sup>1</sup> On October 15, 2013, CLW requested that EPA narrow the scope of the RFI to exclude testing for TRS because there is no regulatory basis for collection of information on TRS concentrations from the M&D Digesters. If EPA narrows the scope of the RFI, then this test plan will be considered revised to exclude TRS.
7. **Test Methods to be Used:** Testing will be conducted in accordance with EPA methods in Title 40 Code of Federal Regulations Part 60 (40 CFR 60), Appendix A, July 1, 2011 and the Emission Measurement Technical Information Center's website, Test Methods Section ([www.epa.gov/ttn/emc](http://www.epa.gov/ttn/emc))

Sample Points 1 and 2 (M&D No.1) and 5 and 6 (M&D No.2):

Flow Rate:	EPA Methods 1A and Modified 2C (S- pitot flow traverses of duct <12") <sup>2</sup>
CO <sub>2</sub> and O <sub>2</sub> :	Assume ambient molecular weight 28.96
Moisture:	EPA Method ALT-008 (midget impinger catch incorporated with EPA Method 308)
Methanol:	EPA Method 308 (sorber tube and midget impinger with analysis by GC/FID)
TRS:	ASTM D5504-08 (silonite coated Summa canister with analysis by GC/SCD)

Sample Points 3 and 4 (M&D No.1) and 7 and 8 (M&D No.2):

Flow Rate:	EPA Methods 1A and 2D (calibrated orifice plates)
CO <sub>2</sub> and O <sub>2</sub> :	Assume ambient molecular weight 28.96
Moisture:	EPA Method ALT-008 (midget impinger catch incorporated with EPA Method 308)
Methanol:	EPA Method 308 (sorber tube and midget impinger with analysis by GC/FID)

8. **Quality Assurance/Quality Control (QA/QC):** Method-specific quality assurance/quality control procedures must be performed to ensure that the data is valid. Documentation of the procedures and results will be presented in the test report for review. Omission of this critical information may result in rejection of the data, requiring a retest. This documentation will include at least the following:

Continuous analyzer QC procedures: Field crews will operate the analyzers according to the test method requirements with additional data backup.

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<sup>1</sup> TRS compounds analyzed will be dimethyl disulfide, dimethyl sulfide, hydrogen sulfide, and methyl mercaptan.

<sup>2</sup> Modified to use a S-type pitot because it is expected that a p-type pitot may plug due to the moisture content of the gas stream.

Manual equipment QA/QC procedures: Field crews will operate the manual testing equipment according to the test method requirements. On-site quality control procedures include:

- Operators will perform pre- and post-test leak checks on the sampling system and pitot lines.
- Thermocouples attached to the pitots and probes are calibrated in the field using EPA Alternate Method 11. A single-point calibration on each thermocouple system using a reference thermometer is performed. Thermocouples must agree within  $\pm 2^{\circ}\text{F}$  with the reference thermometer. Also, prior to use, thermocouple systems are checked for ambient temperature before heaters are started.
- Pitots are examined before and after each use to confirm that they are still aligned.
- Pre- and post-test calibrations on the meter boxes will be included with the report, along with semi-annual calibrations of critical orifices, pitots, and thermocouples (sample box impinger outlet and oven, meter box inlet and outlet, and thermocouple indicators).
- Blank reagents are submitted to the laboratory with the samples. Liquid levels are marked on sample jars in the field and are verified by the laboratory.

EPA Method 308 QA/QC procedures: On-site quality control procedures include:

- A minimum of 60 liters of sample volume per run will be collected.
- The silica gel sorbent tube will be removed prior to the final system leak check per Section 8.1.3 of the method.
- Samples will be shipped on ice and arrive at the lab  $< 20^{\circ}\text{C}$ . The lab to be used is ALS in Kelso, Washington.

Audit Sample Requirement: The EPA Stationary Source Audit Sample Program was restructured and promulgated on September 30, 2010 and was made effective 30 days after that date. The Standard requires that the Facility or their representative must order audit samples if they are available. Currently, accredited Providers offer audit samples for EPA Methods 6, 7, 8, 12, 13A, 13B, 26, 26A, 29 and 101A. If samples are not available from at least two accredited Providers they are not required. The TNI website [www.nelac-institute.org/ssas/](http://www.nelac-institute.org/ssas/) will be referred to for a list of available accredited audit Providers and audits.

60.8(g)(1) "No audit samples are required for the following test methods: Methods 3C of Appendix A–3 of Part 60, Methods 6C, 7E, 9, and 10 of Appendix A–4 of Part 60, Method 18 of Appendix A–6 of Part 60, Methods 20, 22, and 25A of Appendix A–7 of Part 60, and Methods 303, 318, 320, and 321 of Appendix A of Part 63."

There are currently no audit samples available for any of the test methods in this test plan.

9. **Number of Sampling Replicates and their Duration:**

Three (3) test runs of 60 to 120 minutes at each sample location will be done for each M&D unit.

EPA Method 308 will be sampled between 200-1000 ml/min for a minimum sample volume of 60 liters. Integrated ASTM D5504-08 Summa canisters will be collected for TRS during each test run. Summa canisters will be shipped by ground to the lab (ALS in Kelso, Washington). Summa canister hold time for sulfurs is 30 days.

10. **Chain of Custody:** Chain of custody forms will be completed at the end of each day's sampling and will be included with the samples when shipped to the lab.

11. **Reporting Units for Results:** Methanol results will be expressed as concentrations (ppmv dry basis), as rates (lb/hr), and on a production basis (lb/ton of ODP). TRS results will be reported as concentration, ppmv dry basis, uncorrected for oxygen.

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15. **Process Data Collected:** EPA requested that the following process data be collected with a minimum frequency of at least one data point per hour. CLW does not collect all of the requested data on an hourly basis. Exceptions are described in Section 19 (Other Considerations).

- Sawdust Mass feed rate (bone dry tons/hr)
- Wood Species (percent)
- Metering screw rate in revolutions per minute (rpm)
- Cooking liquor volumetric feed rate

- Millwater into exhaust chamber volumetric feed rate and temperature
- Digester production rate (tons of oven dried pulp (ODP)/hr)
- Exhaust chamber temperature
- Exhaust condenser temperature
- Any other process parameter used by the facility or testing firm in determining or calculating emission rates in all units of measure required by the Information Request
- The following Bauer Valve parameters:
  1. RPM
  2. Recycled steam temperature and pressure
  3. Pre-purge steam temperature and pressure
  4. Rotor pocket purge steam temperature and pressure
  5. Secondary exhaust steam temperature and pressure

Process/Production/Control information will be gathered for each test run by the Site Personnel and provided to Horizon for inclusion in the report.

**16. Plant Entry & Safety Requirements:** The test team will follow internal safety policies and abide by any site specific safety and entry requirements.

**17. Responsibilities of Test Personnel:** The test team will consist of one Project Manager and four Technicians.

**18. Tentative Test Schedule:**

Day 1: Mobilize

Day 2: Setup

Day 3: Test M&D No. 1 and setup on M&D No. 2

Day 4: Test M&D No. 2 and demobilize

**19. Other Considerations:**

- The sawdust mass feed rate will be calculated once per day.
- One sawdust wood species sample will be taken during the performance test. CLW will provide EPA with 2013 wood species data.
- Mill water temperature going to the exhaust chamber will be measured at the header, upstream from the digesters.
- The digester production rate will be calculated.
- Temperature from the exhaust chamber will be measured and recorded daily (as measured at the exterior surface of the pipe).
- Bauer valve parameters that include recycled, pre-purge, pocket purge, and secondary exhaust steam temperatures will be measured and recorded daily (as measured at the exterior surface of the pipe).
- It is planned to use ASTM D5504-08 in the place of EPA Method 16 for TRS. This is because of the logistical challenges of operating multiple field GCs without pre-knowledge of calibration gases needed and GC drift concerns of operating GCs in an uncontrolled environment. The laboratory setting will provide a more stable environment for dilution of samples (if necessary) and GC operation. It is anticipated that if EPA Method 16 was to be used in the field that two or more GCs per sample location will be needed because of different concentrations of the four TRS compounds (at least six GCs per M&D Unit). The lab will be able to dilute samples if necessary and use a single GC.

- Calibrated orifice plates will be used at Sample Points 3, 4, 7 and 8 for flow by EPA Method 2D. There is no location available that meets EPA Method 1 and 2 criteria for flow at these locations.

20. **Administrative Notes:** Unless notified as provided in paragraph #3 of the RFI, this test plan is considered approved for testing. Horizon requests a letter acknowledging receipt and approval of this plan from EPA.

EPA will be notified of any changes in test plans prior to testing. Horizon recognizes that significant changes not acknowledged, which could affect accuracy and reliability of the results, could result in test report rejection.

Test reports will be prepared by Horizon Engineering and will include the sampling site descriptions, procedures, process data, all results and example calculations, field sampling and data reduction procedures, laboratory analysis reports, chain of custody documentation, and QA/QC documentation. The QA/QC documentation will include determination of the method detection level. As agreed on August 28, 2013, test reports will be submitted to EPA no later than February 14, 2014, unless another deadline is agreed upon. CLW will send one (1) hardcopy of the completed test report to you at the address above.

Any questions or comments relating to this test plan should be directed to me.

Sincerely,



David Bagwell, QSTI  
Managing Member  
Horizon Engineering, LLC

cc: Rick Wilkinson, Clearwater Paper Corporation  
Marv Lewallen, Clearwater Paper Corporation  
Bob Pernsteiner, Clearwater Paper Corporation